

REMARKS

Applicants have the following response to the Office Action of July 28, 2004. Applicants will address each of the Examiner's objections and rejections in the order in which they appear in the Office Action. In an interview with the Examiner on November 2, 2004, the Examiner agreed with Applicants' arguments presented below and stated that the Examiner would withdraw each of these rejections.

Claim Rejections - 35 USC §103

In the Office Action, the Examiner rejects Claims 6-10, 12, 14 and 16 under 35 USC §103(a) as being unpatentable over Mitsui et al. U.S. 5,955,223 in view of Ohmi et al. U.S. 2002/0106830 and Carcia et al. U.S. 5,897,977. This rejection is respectfully traversed.

The present invention relates to a manufacturing method of a photo mask blank that improves the uniformity of film characteristic of the thin film in the photo mask blank. In the claimed method, a surface of the substrate on which said thin film is being formed and a surface of a sputtering target are in opposed positions with a center axis of the target deviating from a center axis of the substrate surface, and the sputtering is carried out while rotating the substrate around its central axis, to form a thin film on the substrate.

As the Examiner admits, while Mitsui may disclose generally the manufacturing method of a photo mask blank, the reference discloses no specific film forming method. Accordingly, the Examiner cites Ohmi and Carcia. Applicants respectfully submit that the Office Action's interpretation of Ohmi and Carcia is incorrect.

For example, in the Office Action, the Examiner states that Ohmi discloses a sputter apparatus (Figure 7) that is for producing a photo mask [0005]. Applicants disagree.

Ohmi discloses a sputtering apparatus used in a manufacture of an optical article (such as a lens) incorporated in an exposure apparatus or optical system (such as a stepper) that is used in fabrication of photomasks. (See [0002] - [0005] in Ohmi). The reference to “photomasks” in paragraph [0005] is to show a technical field in which the exposure apparatus is used, and is thus unrelated to the sputtering apparatus.

Further, the Examiner also states in section 6 of the Office Action that Ohmi discloses that the apparatus is useful in making photomasks. Applicants disagree. As explained above, the apparatus in the reference is an exposure apparatus.

The Examiner also states in section 8 of the Office Action that Carcia discloses that in order to control the deposition rate and thickness of the deposited layers, the substrates should be rotated while sputtering. However, Claim 6 of the present application recites the step of “sputtering the target while rotating said substrate around its center axis” [emphasis added] In contrast, Carcia discloses a rotatable table for moving the substrates under multiple different targets by rotation. There is no disclosure in Carcia of rotating the substrate around its center axis in process of sputtering. This is shown in the attached illustrations. The “rotation” in Carcia is intended to revolve the substrate on the table, not rotate that substrate around the substrate’s central axis.

Accordingly, it is clear that even if the references are properly combinable (which Applicants do not admit), the combination fails to disclose or suggest the claimed method. Therefore, the claims are patentable over the cited references, and it is requested that this rejection be withdrawn.

Claim Objections

The Examiner also objects to Claims 6-10 and 12-16 as having informalities therein. In particular, the Examiner is requesting that Claim 6 be amended to change “in an opposed positions” to “in opposed positions.” Applicants have now done so and respectfully request that this objection be withdrawn.

Double Patenting

The Examiner also provisionally rejects Claims 6-10 and 12-15 under the judicially created doctrine of obviousness-type double patenting over claims 1 and 2 of copending application no. 09/952,445 in view of Ohmi et al. and Carcia. This rejection is respectfully traversed.

Applicants initially note that the present application is a continuation of the ‘445 application. However, in order to advance the prosecution of this application, a terminal disclaimer is being submitted. Therefore, it is respectfully submitted that this rejection has been overcome, and it is requested that it be withdrawn.

Conclusion

Accordingly, for at least the above-stated reasons, the present application is now in a condition for allowance and should now be allowed.

If the Examiner does not allow the application, it is respectfully requested that he call the undersigned to discuss prior to issuing a further office action.

If any fee is due for this amendment, please charge our deposit account 50/1039.

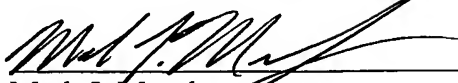
Favorable reconsideration is earnestly solicited.

Date: November 2, 2004

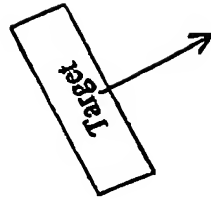
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The present invention



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The substrate rotating around its center axis while sputtering.

